



The power of language: Exploring values, empowerment dynamics and communication strategies for gender-inclusive energy service design in rural Uganda

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ABSTRACT

Understanding consumer needs and values is crucial to the sustainable delivery and uptake of energy access projects in Low-and Middle-Income Countries (LMICs). Nevertheless, many energy projects aim to empower women without first assessing gendered roles, needs, values, and relations for both men and women in project communities. Neglecting these can be detrimental to the end-users of energy projects, exacerbating conflict within households rather than empowering vulnerable groups. We propose a value-based approach to elicit the varying priorities and values of men and women and assess how these may shape energy access project design and communication in LMICs. Data from 84 qualitative individual interviews, equally split between men and women, and 28 gender-disaggregated focus-group discussions in seven rural Ugandan communities were used. We find that men and women in rural Uganda held largely the same high-priority underlying values focused on basic human needs such as income, healthcare, information services, food security, and water security. However, the language used to communicate these values differed in small but significant ways. Based on this, we offer two potential solutions for a more balanced gender-inclusive approach to energy service project design and communication: (1) Design projects and messaging based on underlying values of both genders while avoiding inadvertently reproducing patriarchal norms; and (2) use gender-specific messaging and vocabulary¹ linking energy projects to underlying values to increase buy-in. This work constitutes a first step in better understanding the importance of gender-disaggregated data in decision-making for energy access initiatives in LMICs.

1. Introduction

This paper seeks to investigate how the understanding of gender-specific perceived needs and values can be used to improve energy service design and delivery within the context of rural Uganda.

In recent years there has been significant international effort to decrease gender inequalities in energy access in Low- and Middle-Income Countries (LMICs), with an increased focus on facilitating energy access for women [2]. Access to clean and modern energy services can contribute to the achievement of multiple Sustainable Development Goals (SDGs) [3]; the synergy between access to modern energy services (i.e., SDG 7) and gender equality (i.e., SDG 5) is particularly strong [4].

In light of this, development agendas are now commonly set to empower and unburden women, who are locked into pre-established gender roles and reproductive activities,² through modern energy service provision. While these activities are hugely socially valuable, they are systemically economically undervalued [5]. Women are often expected to work a “double-shift” of ill-compensated agricultural labour and domestic duties [6] which allows them little time or financial means to pursue education or other opportunities. As highlighted by Chandna, collecting traditional energy sources is, ironically, itself one of these burdensome domestic duties [7]: “women in poor households spend a large part of their day performing basic tasks such as collecting fuel wood or kerosene which keeps them away from employment or

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¹ In this research, vocabulary refers to the words, which vary from person to person, used to form associated meanings around the UPVs.

² Reproductive activities or labour comprise unpaid work commonly undertaken by women, including cooking, washing clothes, bearing and caring for children, etc. [1]. This term is used to capture the diverse roles of women in rural Uganda who spend most of their time on this wide range of undervalued activities.

education opportunities and limits their options to socialise out of the private sphere of domestic life". Time-saving modern energy services (e.g., electric cooking or appliances) are thought to help with this gendered labour disparity.

Contributing to the fictitious separation between men and women's tasks and responsibilities, and the systemic undervaluing of women's work, is gender. Gender is a social construction which varies across geographies. A common element is the influence of gender constructions on societal expectations of men and women's roles and values in society as individuals or as groups. Social actors drive the creation and perpetration of these roles and values through "language, gesture, and all manner of symbolic social sign" [8].

Here, we use Butler's definition of gender as act or 'performance' in the sense that it is not static but rather changes according to one's inner sense of self and in relation to society. Particularly important is Butler's reflection that the changing nature of gender is put under threat by the persistent societal association of gender to one's biological sex (ibid). Social inequalities can be created based on one's gender. Some of these are related to access to resources, assets, laws, or indirectly bounded to one's pre-established role in society. For example, inequality in education or economic opportunities can be linked to gender-based division of labour.

Modern energy services are well positioned as means to alleviate gendered inequalities. Illumination, refrigeration, clean cooking, and communication can increase the chances for people in disadvantaged social positions to complete primary education, unburden menial tasks, and improve one's health. Recent research highlighted the disadvantages of women and girls living in energy poverty and how they are more likely to suffer from the collection and use of traditional energy sources. Energy access can help women's health (by reducing indoor air pollution) and reduce time poverty (by accelerating time-consuming tasks) [9].

While there is significant evidence for the ability of energy access to positively impact women's welfare, there is little evidence as to how energy access projects can affect gender relations more broadly in a community [10]. Additionally, there is growing concern that initiatives which solely focus on women and girls can negatively impact communities—particularly those where traditional gender roles are upheld [11]. Indeed, the preliminary review by Winther et al. [10] showed that "despite the fact that gender and gender analysis relate to issues of power between women and men, many studies focus solely on women and miss out on the relational aspects". We argue that understanding the impacts of women's empowerment initiatives on the dynamics of the wider community can not only multiply benefits by distributing them more widely but can also help to garner broader support from the community.

Appropriate messaging is key to building support for energy initiatives and realising their benefits. In high-income countries (HICs), the benefits of appropriate messaging targeted at different demographics has long been acknowledged to increase project buy-in or product uptake [12,13]. In LMICs, targeted project messaging to maximise acceptance and uptake is far less commonplace [14]. Appropriate messaging can make or break development projects like energy access initiatives where complex gender relations are central to project success. Different groups within a community may understand the benefits of the project differently, making different messaging is more likely to "hit home" [14]. As energy service projects affect the entire community but have different benefits amongst identity sub-groups (e.g., men and women, older and younger people, disabled or non-disabled people), messaging should ideally ensure that each group sees the benefits the project can have for them. This was evident from a recent study conducted in Rajasthan (India) where health messaging related to cookstoves was found to be more effective for women [15]. A study in Northern Kenya on cleaner cookstoves (CCS) found that "programs should equally target men with CCS messaging, bundle cookstoves with other products that men value" [16, p. 1]. A suitable technical design

to meet the needs of the community and its various identity subsets is inadequate; it must be communicated how this technology resonates with user values and needs to ensure uptake and feelings of community ownership.

To understand the extent of gender differences in energy poverty and subsequent energy project design and messaging decisions, a large quantity of gender-disaggregated data is needed. This is currently lacking, as highlighted by SE4ALL [17, p. 272]: "Sex-disaggregated data on energy use are lacking [...]. When available, evidence focuses on women rather than on women and men. There are only a few insights into men's activities and on changes in gender roles". There is a need to reimagine energy project delivery through a lens which accounts for more complex and relational gender dynamics. Mihyo and Mukuna underscored this in relation to the issue of energy access for cooking [18, p.xiii]: "[there is a need for a] broader framework which recognises that far from being just a women's problem (as the cooking problem has been seen in the past), the gender-energy nexus should be seen as a societal problem, which needs to be dealt with taking into account the social relations between men and women, and the expectations and roles of both men and women".

In this paper we argue that the provision of energy services must be done within an understanding of the gender dimension of the end-user's activities (i.e. how different genders use and value energy for different services) such that energy services can be better tailored to peoples' perceived needs and values, and benefits can be communicated in a way which generates project uptake. To achieve this, we point to a need to undertake balanced and relational gender analysis considering the roles and responsibilities of both men and women to ensure successful energy project design and messaging. We identify a knowledge gap in understanding how energy can be used to facilitate the needs and values of both women and men [19] in a way that accounts for power structures, gender roles, and relations. We use the User-Perceived Value (UPV) Framework proposed by Hirmer [20] as one effective method to capture values in a particular moment in time. We argue that by employing such a process during project design, which accounts for complex and relational community gender dynamics, women's liberation can be facilitated by equal access to energy resources without inflaming gendered tensions in project communities. This is in line with previous work by Winther et al. [10], Clancy et al. [21] and Dutta et al., Dutta2017.

Within the described relational framing, this paper first reviews the theoretical context of gender and existing literature on gender-specific energy initiatives and their impacts to better understand the status-quo (Section 2.1), and unintended consequences of gendered initiatives (Section 2.2). Value-based approaches to development project planning are also briefly discussed (Section 2.3), before our gender-disaggregated value-based assessment approach is introduced (Section 3). This approach is used to identify gender-disaggregated values for our Ugandan case study, which are analysed in Section 4. We discuss the implications of these results for practical energy initiatives in Section 5, where a practical example based on the values of a female interviewee is used to illustrate the recommendations, and conclude in Section 6 with a view to how to implement and manage energy projects in a gender-inclusive way.

To ensure the study's integrity, a risk and ethics assessment following the Cambridge School of Technology Research Ethics Committee at the University of Cambridge in accordance with the procedures laid down by the University for Ethical Approval for all research involving human participants was completed and approved with Reference: R68195/RE001. To protect the participants' identity, all names were removed.

2. Literature review

2.1. The construction of gender and its influence in energy access

Gender is a cultural construct which assigns values, behaviours, and roles to each biological sex, commonly known as masculinities

and femininities. These social prescriptions vary across geographies, times in history, and life-stages [22]. Underlying this variety, however, is often the common element of patriarchy, which has long defined the boundaries of women's freedom and access to equal enjoyment of opportunities and public life.

The impacts of patriarchal gender construction can be illustrated using the case of Ghana, a deeply patriarchal society [23], where gender is the result of historical entanglements of local and international influences shaping the collective imaginaries of masculinities and femininities [24]. Gyan and Mfoafo-M'Carthy [24] assert that in Ghana "Western interference, colonialism, patriarchy, and capitalist ideologies continue to hinder the involvement of women in the development of their communities". The most extreme manifestation of women's disadvantages in Ghana is represented by a high number of women suffering gender-based violence by their partners. While it is necessary to be cautious with these affirmations, a recent study found that nationwide 33% of women experienced physical violence by their partners and 29% had their first sexual experience by force [23]. Previous studies on Ghanaian society show how patriarchy and gender inequality can be major factors in creating tolerance towards rape and rape attitudes [25].

Globally, the energy sector has remained largely neutral towards feminist movements until the 1995 Beijing World Conference on Women. The report of this conference declared that governments should: "Support the development of women's equal access to housing infrastructure, safe water, and sustainable and affordable energy technologies, such as wind, solar, biomass and other renewable sources, through participatory needs assessments, energy planning and policy formulation at the local and national levels" [26, p. 108]. Following this, many academic studies and development interventions began to focus on women's and girls' access to energy. These ranged from mainstreaming gender in energy access in the field [21,27,28], to macro-level discussions of women in energy policy [29,30] and women in the energy systems workforce [31] and engineering [32]. While important advancements were made, such feminist work is not immune to challenges. This is especially the case in LMICs, where a perceived excessive focus on women has been seen to spark local conflicts, particularly within programmes which result in women's sudden economic empowerment [33,34].

While the construction of gender norms hold great weight in our study country of Uganda, the country is teeming with initiatives promoting women's equality, including grassroots movements and quota systems which foresee the inclusion of women within governing bodies [35]. These initiatives combat the overpowering patriarchal influence of traditional institutions (including religious authorities) which "implicitly discriminate against women" [35, p. 437] and are interwoven in the rules of Ugandan society. While Uganda has been seen to place great importance on gender equity with regard to political rights since the 1980s [36], this narrow definition of equity does not offer holistic gender parity. Women's movements in Uganda have promoted a far more transformative agenda, including changes to land ownership and marriage laws, which would directly challenge ideas of male superiority and authority [36]. These broader notions of equity are less supported in practice. Wyrod [37] during his ethnography in the Ugandan capital, Kampala, noticed how the women's liberation movement brought some new configurations in gender relations, but women still retained notions of what he called "innate male authority". This shows how no change, however positive and well intended, can be expected to be immediate and long-lasting, which applies as well to gender mainstreaming in energy development programmes. While various parts of Ugandan society are supporting women's emancipation, gender roles still remain clearly defined, indicating the need for a deeper understanding of gendered needs and values.

2.2. Unintended consequences of gendered initiatives

Mounting evidence from LMICs suggests that a sudden change in women's economic conditions, resulting for instance from micro-finance or electrification programmes, can abruptly alter intra-household relations with detrimental consequences for women's wellbeing [10]. Winther et al. [10] show how in some cases in northern India and Zanzibar, electrification highlighted the social divide and strengthened patriarchal structures. Silberschmidt [38, p. 665] states that "women are becoming increasingly economically independent and leave husbands is a serious threat to the male ego and honor. Many men expressed outright jealousy and fear that when wives have their own business projects outside the home they may feel attracted to other men". This suggests that when attention is given to the financial wellbeing of women through programmes like Cash Conditional Transfers (CCT) or microfinance for business-creation, some men may feel threatened by women's economic independence, which can exacerbate violent behaviours towards women.

Access to electricity may also confine women in their care duties, paradoxically reinforcing gender roles by facilitating technologies which make these duties easier [10]. This is shown, for instance, in Kerala (India), where Wilhite [39] showed how electrification increased dowry expectations with the inclusion of electrical appliances, increasing financial burden of families and reinforcing gender inequalities in household duties.

Similar unintended consequences have occurred in energy development programmes with a pointed focus on women. Matinga and Annegarn [40] found that in rural South African villages, electrification increases the perceived income disparity between genders. The previously discussed work by Winther et al. [10] also highlighted socially divisive and patriarchy-strengthening effects of electrification. The sizeable field of academic and practical energy access work focused on women's empowerment—including well-known initiatives such as ENERGIA [41], Clean Cooking Alliance [42], Solar Sisters [43], and Women and Sustainable Energy Initiative [44]—is at risk of these negative effects. For example, Wang et al. [45] found that CCS projects linked with carbon offset investments in western Kenya marginalised women rather than empowered them, as these projects deepened the knowledge divide between donors and users. Most neoliberal development initiatives have focused on the immediate benefits of energy access [46], failing to take a more holistic perspective on the energy transition and women's empowerment [10]. Wang et al. (2015) reported that while women in the western Kenyan case saved time and benefited from a reduction of smoke, there were important issues with the maintenance costs of stoves as well as food and taste preferences which minimised their benefit. Moreover, some CCS were found to be more tedious to use than traditional methods and required further processing of dry firewood, leading to their abandonment (*ibid*). This case highlights how energy technologies ill-matched to user needs, and in particular to gendered needs, can create unintentional harms or not be taken up as implementers may hope.

Despite the heavy focus on women's economic empowerment through energy in development sector discourse, the evidence of an actual shift in gender inequality and empowerment attributable to energy initiatives remains largely thin [47]. These findings echo international anti-poverty programmes of the early 90s which focused on women's material poverty as a way of leading to their emancipation. Chant's [48] important work highlighted the discrepancies in the methods and discourses on women's poverty. For example, Chant noted that early work on women's poverty tended to consist of surveys on exclusively female-headed households. This method led to the understanding that female-headed households were to be considered the 'poorest among the poor'. However, their work in Mexico, the Philippines, and Costa Rica shows how female-headed household felt more secure financially than male-headed household as they felt free to manage their resources and time more independently. The author

reflected on the importance of understanding local intra-household gender dynamics and how women's emancipation and independence could not rely exclusively on alleviating women's material poverty. Rather, Chant invited reflection on the broader issues surrounding women's disadvantages, including intra-household decision making and the burden of unbalanced reproductive activities.

The evidence points to the importance of undertaking socio-cultural assessment of local values prior to interventions, and shows that well-intended programmes can create negative outcomes for the local population. It further shows that it is fundamental to assess the perceived value and responsibilities in both men and women. This is particularly important where the risk of initiatives backfiring is greater—for instance in communities that are more rigid towards the place of men and women in the society, as is often the case in rural Uganda.

2.3. Gender within value-based approaches

Value-theory is widely applied in the delivery of products or services in HICs. It has been studied in a broad range of academic disciplines [49,50] ranging from psychology to philosophy, sociology, and marketing (e.g., [51–54]). In brief, value-theory is commonly associated with purchasing behaviours [55,56]; in this context, value can be derived at the point of product exchange ('value in exchange') [57], the practical interaction with a product or service ('value in use') [58,59], the emotional experience with a product or service (value in experience') [59,60], and the prestige that comes with the use of a product or service ('value in sign') [61].

As a response to the increased importance placed on bottom-up approaches (e.g., [62,63]) and private sector involvement (e.g., [64,65]) in development interventions, value-theory has more recently found application in LMICs. In this context, the importance of accounting for local preferences and values of consumers has been noted with regards to purchasing behaviour of green products in Pakistan [66], the utilisation of mosquito nets in Malawi [67], and technology innovation for ICT in India [68], to name but a few. Similarly, and particularly relevant to this research, are the works by Clements [69], Howells [70], and Hirmer [20] who made a first step in better understanding decision-making for the uptake and utilisation of energy services using value-theory in LMICs. It is the work of the latter upon which this paper builds.

We therefore adopt Hirmer's definition of perceived value [20]: "the benefits, concerns, feelings and underlying drivers that vary in importance and act as the main motivators in the lives of the people—as perceived and defined by the [users] themselves at a given time". Perceived value differs across people, is influenced by one's surrounding environment and interaction with that environment, and is not constant over time.

It is therefore unsurprising that value may be perceived differently by different demographics, such as genders, ages, or ethnicities. For example, in an early study on gender and value in decision-making in HICs, Crow et al. [71, p. 4] found substantial differences in the way men and women value equality and equity: "women respondents value equality more highly than men respondents".

As value-theory has only recently been applied to LMICs, it is unsurprising that gender-disaggregated analysis of perceived values for energy projects constitutes a research gap. To fill this gap, we analyse perceived values disaggregated by gender and explore their relationship to energy service delivery.

3. Method

Text-based analysis rooted in value-theory was used to identify gender-disaggregated values. The UPV method was chosen to collect and annotate the original dataset because it allows for a timely, fine-grained community assessment based on a corpus of rigorously

collected qualitative interviews. Various statistical and language processing methods were then used to quantify the values embedded in the original text. These methods are described in the sub-sections below, as are the limitations of the study which will require future investigation. For additional detail on study methods refer to [20,72] or the accompanying Data in Brief article [73].

3.1. Data collection and annotation

To explore the disaggregated needs and values of men and women as they pertain to energy services at a given point in time, we analyse value data from 112 interviews collected by Hirmer [20] in seven villages in rural Uganda in 2016.³ The seven rural villages are located in four different regions in Uganda: Northern, Eastern, South-western, and Western Uganda. At the time of data collection, villages were located in remote areas far from the main roads.

The interview dataset was originally collected using the UPV Game [20]. This method is meant to be an efficient way to elicit community values which can be particularly useful to inform development project implementation at a given point in time. The game requires interviewees to select and rank items.⁴ This was followed by why-probing to elicit verbal data on underlying personal and cultural values. Importantly, after two or more rounds of why-probing, the values discussed often reflect deeper, more abstracted values beyond the surface material utility of the initial item prompt. This is shown in the following extract, where the item 'house' was selected (UPV annotation is shown in [square brackets] and non-italicised)⁵:

I can never sleep out, it protects me from rain and you know if it rains on me I get fever I start shaking, me for sure I cannot sleep outside. [Shelter], [Health consequential]. For sure a normal human being has to have a house and it helps me a lot, when you have a house you're respected [...] in our culture [Tradition], [Shelter], [Reputation]. Also a house keeps secrecy for example I can be bitten by a snake if I had sex outside [Safety (nature)]. You see, me I cannot [have sex outside] because [if] my child is looking for mangoes in the bush and [...] finds me there, how do I explain, can you imagine! [Caring], [Dignity]

To reflect the complex and situational nature of human decision-making [77], interviews were carried out in various settings as follows [78]: (a) six participants⁶ for each gender were individually interviewed; (b) then, the six participants participated in two gendered group interviews, and (c) finally, the three most vocal participants for each group discussion took part in a group mixed interview. This

³ These villages were selected as they had benefited from rural electrification initiatives at the time of data collection.

⁴ Participants selected 20 out of 46 presented items. The item set comprised everyday-use items commonly found in rural areas, including livestock (cow, chicken), basic electronic gadgets (mobile phone, radio), household goods (dishes, blanket), and horticultural items (plough, hoe). They were selected expanding on the items proposed by and Peace Child International [74], and were adapted to the Ugandan context in collaboration with Ugandans. This game was designed to be inclusive of illiterate participants, minimising potential sources of bias [75]: all item prompts were graphically depicted [76], using the same style of illustration (refer to [20] for more details). Participants could also add new items.

⁵ In this study we work with translated text. The interviews were translated literally and faithfully as possible without obscuring the meaning.

⁶ Participants were selected in collaboration with local community development officers and the village chairman. Participants were of different ages and included individuals from a variety of social classes. Leaders and overpowering and dominant individuals were not interviewed, in order to minimise the effect of social desirability bias [79] and allow for the voices of vulnerable groups to be captured. To ensure that such stakeholders felt respected, and to benefit from their knowledge of the community, such individuals were engaged in preparation activities during data collection.

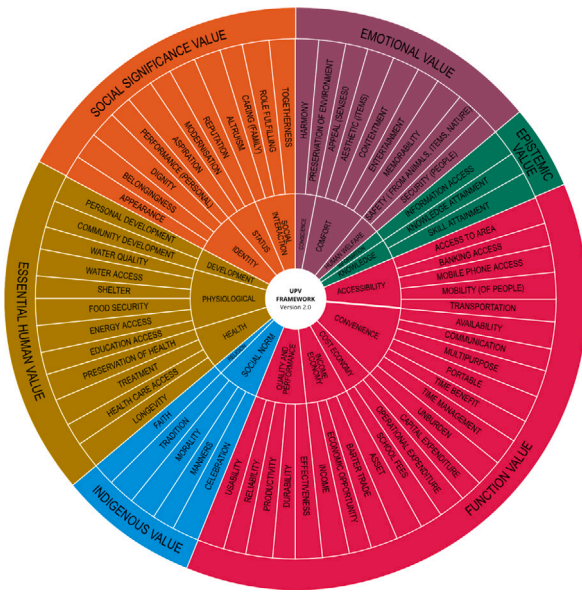


Fig. 1. User-Perceived Value framework adapted from [19] showing three levels of value categorisation, where tier 3 (middle ring) depicts the main value categories, while tier 2 (inner ring) and tier 1 (outer ring) are higher levels of categorisation. Refer to Appendix for the complete list of UPVs and their definitions.

resulted in 12 individual interviews and 5 group interviews per village for seven villages. The group mixed interview is excluded from this paper; only data obtained from individual and the gender-specific group interview settings are considered (i.e., 112 interviews). The interviews were equally distributed across men and women. As recommended by [80] and described in [78], three native speakers for each village carried out the interviews. To ensure consistency and mitigate the effect of interviewer bias, interviewers received a two-day training workshop in which they practised mock interviews; moreover, a local research assistant oversaw the data collection process.

3.2. Data analysis

The interview dataset underwent a rigorous annotation process to quantify the gender-disaggregated values underlying the text. Each sentence in each interview was separately annotated with the values it conveys. The complete set of values used for annotation follows the UPV framework shown in Fig. 1. To minimise the effect of bias, each sentence was independently labelled by two annotators; in case of disagreement, the final annotation for each sentence was decided upon discussion between the annotators, as described in detail in [72]. To protect the participants' identity, all names were removed.

Below we discuss the analysis methods applied to various aspects of the annotated dataset. These include the items that interviewees selected, the vocabulary used, and their UPV classifications.

3.2.1. Item selection

The frequency of item selection and ranking of items selected by men and women was compared. A simple weighting strategy was applied to reflect the importance each interviewee placed on each item based on the rank in which they were selected during the UPV game. Given an item of rank r , the final item weight w_r was given by:

$$w_r = 1 - (0.05r) + 0.05, \text{ where } r \in \{1..20\} \quad (1)$$

In effect, each item was given an initial value of 1, which is then downscaled according to its ranking in the UPV game. For instance, the weight for the first selected item w_1 was computed as follows:

$$w_1 = 1, \text{ as } 1 - (0.05 * 1) + 0.05 = 1 \quad (2)$$

Similarly, the 2nd, 3rd, and 4th selected item were then given weights of:

$$w_2 = 0.95 \quad w_3 = 0.90 \quad w_4 = 0.85 \quad (3)$$

and so on, up to the 20th and last selected item in the interview, which was given the weight

$$w_{20} = 0.05 \quad (4)$$

In this way, each item weight reflected its relative importance according to the interviewee's rank.

3.3. Vocabulary

Word frequency analysis was used to better understand the language men and women used to explain their values. We mapped the vocabulary used to explain each value by either gender and compared the frequency of these. To this end, the steps below were followed:

1. For each of the top nine most commonly occurring UPVs across men and women collectively, text annotated with that UPV was selected.
2. Stop-words (e.g., *in*, *to*, *at*, *the*, ...) were removed.
3. Counts of equivalent words were grouped together (i.e., singular/plural or different verb tenses, e.g., *school* and *schools*, *walk* and *walked*).
4. Each word count was normalised by the total number of words which occur in relation with the given UPV label.
5. The 50 remaining words were visualised on a word cloud where word size indicated frequency of use and position left to right on an axis indicated more use by women or by men.

This simple analysis helped to spot obvious similarities and differences of vocabulary.

3.3.1. UPV classification

To map the differences in UPVs between women and men, the interview data was analysed at two levels:

1. **Sentence-level.** We followed [72] and considered each sentence alongside corresponding UPV labels. In this way, 5102 annotated sentences and 9725 UPV labels were obtained. Subsequent sentence-level analysis was based on UPV annotation counts.
2. **Item-level.** Each interview was segmented into 20 paragraphs corresponding to the text in which each one of the 20 selected items was discussed. This resulted in 2240 annotated item-level paragraphs. All sentence-level UPV labels in each item paragraph were merged and their counts normalised such that the UPVs related to each item received a total weight of 1, irrespective of how many sentences or UPVs were attached to that item.

The item-level analysis was conducted to avoid penalising less loquacious participants. Consider a talkative speaker who described how they valued each item using multiple sentences. Using the sentence-based approach, they would produce more weight than a quiet individual who described each item's value with only one sentence. Using the item-based approach, each participant receives the same amount of total weight, 20 points, corresponding to the 20 selected items. The distribution of UPVs per item description in the dataset is shown in Fig. 2, motivating this approach.

The sentence-level and item-level UPV analyses are illustrated through the following example. A participant's discussion of the item *Generator* includes the following three sentences, annotated with five UPVs shown in [square brackets]:

- *If I had it, I would hire it to people who have weddings and different parties to use it since we don't have electricity, plan disco systems, so it can be easy for me to get cash from them.* [Income]

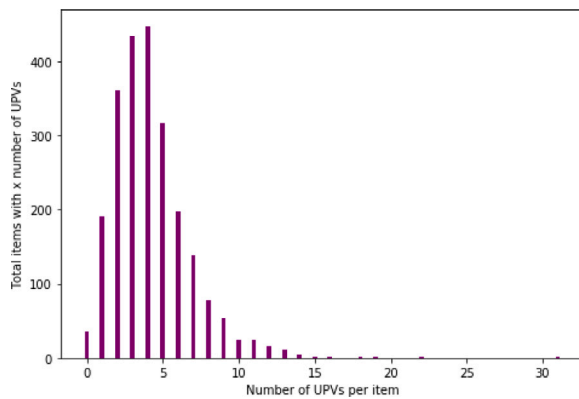


Fig. 2. Distribution of the number of UPVs labelled in the paragraphs of text for each item. Note that while most item descriptions contained 1–7 UPVs, some contained 15 or more. This demonstrates why the item-level analysis normalises over the number of UPVs in an item paragraph.

- *By the way I can connect it to a radio or TV in my bar to entertain my customers so that I can get more cash from them.* [Entertainment], [Income]
- *I can use it to light my house and my kids can be able to read their books and perform well in class.* [Performance (personal)], [Knowledge attainment], [Energy access]

For sentence-level analysis, the counts of the UPVs are simply used as they are:

- [Income]: Total count = 2
- [Entertainment]: Total count = 1
- [Performance (personal)]: Total count = 1
- [Knowledge attainment]: Total count = 1
- [Energy access]: Total count = 1

For item-level analysis, the weight attributed to each UPV is the count divided by the total number of UPVs, ascribing the same total weight of 1 to each item:

- [Income]: Weight = $2/6 = 0.33$
- [Entertainment]: Weight = $1/6 = 0.16$
- [Performance (personal)]: Weight = $1/6 = 0.16$
- [Knowledge attainment]: Weight = $1/6 = 0.16$
- [Energy access]: Weight = $1/6 = 0.16$

This data can be aggregated and assessed using various criteria. In this study, profiles for men and women were built and compared to identify differences and their relevance to energy project design and communication at the time of data collection.

3.4. Study limitations

This study has a number of limitations, namely:

- **Sample size & geography.** The study is limited by the size and geographic range of the interview dataset. The results are specific to the rural Ugandan contexts studied and should not be interpreted as broadly applicable within rural areas of LMICs. As highlighted in Section 1, more gender-disaggregated value data is needed, and conducting similar evaluations in other contexts would significantly add to the literature.
- **Values are time-bound.** While value-theory can offer a deep insight into the underpinning decision-making of people, it is limited by the fact that it provides a snapshot in time. Any major change in a person's life may change their perceived values. This research is therefore limited by its static nature in time, at the

point of data collection. Longitudinal study of the evolution of perceived values throughout time and change in life circumstance would be an interesting area for future study.

- **Context.** While the UPV method is effective in capturing values in a specific time and context, a person's values may not directly translate to what they prioritise in practice. It is therefore important to contextualise the value data and results when implementing projects (e.g., using socioeconomic data or accompanying studies on practices). While supporting socioeconomic data is available for the communities studied in this work, this was not considered in detail. This was considered appropriate for this study as we compare values rather than use them for practical implementation. Further, the work does not analyse the extent to which observed values are constructed by specific societal events, practices, and influences (e.g., migration, colonisation, conflict, etc.). Future work may want look into the origin and construction of values in order to more effectively deconstruct gendered thinking.
- **Positionality.** Gaining a holistic view on non-materially linked community values may be better accomplished by an anthropological observational study. However, such studies are also subject to the observer's (frequently western) bias, colouring their observations and affecting the actions of the observed community. As the UPV method permits the community to speak for themselves about their values explicitly, this can be avoided to a certain extent. The UPV game prompts also needed to be visual, familiar, and related to user values and needs. Graphical depictions of items, that were selected with Ugandans, were effective prompts for this purpose. For more in-depth justifications on this refer to [20].

4. Results

Here, the results of the gender-disaggregated value analysis are described in brief. Interview quotes are used throughout the section to provide illustrations of the data used to make assertions in the text.

4.1. Item selection

Evaluating item selection using the method described in Section 3.2.1, a divergence was notable in the selections between men and women, as shown in Table 1. This may be expected; the differing roles and responsibilities of men and women may cause them to value different items in daily life.

Nevertheless, four of the top five items were the same for both men and women. Furthermore, considering the top 10 items for both men and women, only 15 items were present in total, showing a significant overlap.

4.2. UPV prioritisation and verbatim

The distribution of UPVs between men and women is shown in Table 2 and Fig. 3. Across all UPVs there was little difference in rank between women and men, indicating that they prioritise similar high-level values. In fact, their top 10 UPVs – 'income', 'preventative healthcare', 'accessibility to services', 'food security', 'mobility', 'knowledge attainment', 'water security', 'safety (nature)', 'comfort', and 'information access' – were almost the same (see Table 2).

A greater divergence was seen beyond the top 10 UPVs. Looking at the top 20 UPVs, there was a divergence ≥ 5 between women (W) and men (M) with regards to 'caring' (W: 14, M: 8), and 'wellbeing' (W: 19, M: 14). This divergence increased further when looking beyond the top 20 items. A divergence in rank was observed with regards to: 'aspiration' (W: 21, M: 26), 'reputation' (W: 23, M: 28), 'performance (personal)' (W: 35, M: 29), 'shelter' (W: 31, M: 37), 'appearance' (W: 34, M: 39), 'modernisation' (W: 43, M: 32), 'duty' (W: 41, M: 35), and

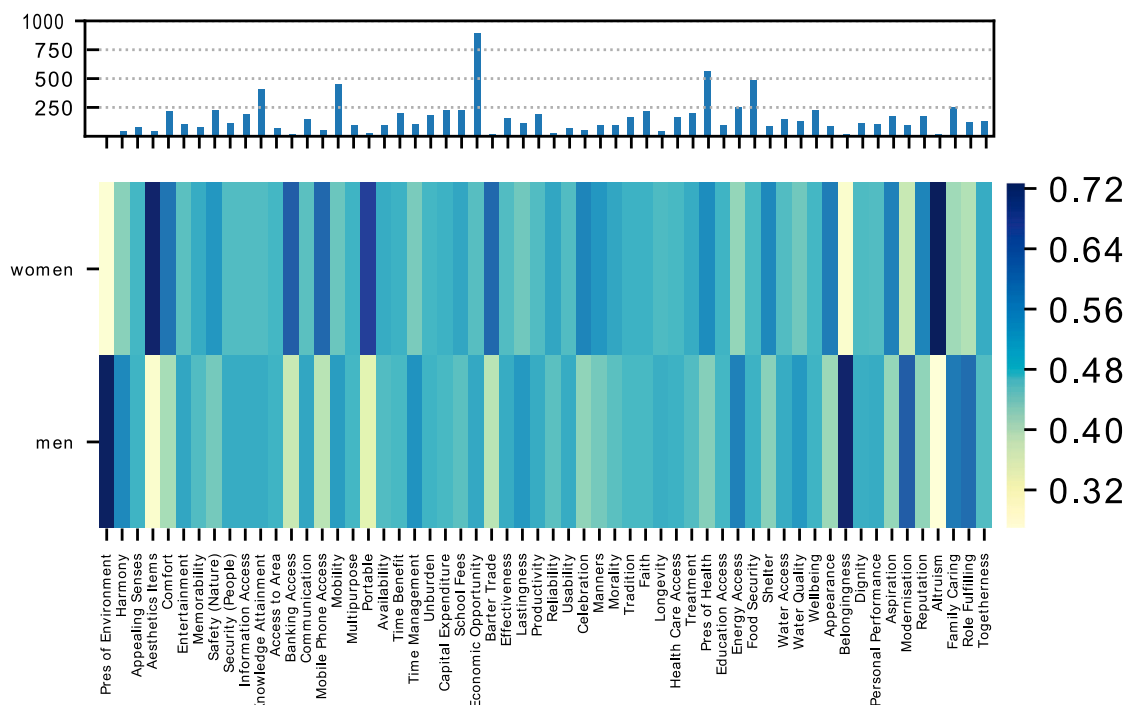


Fig. 3. Frequency of UPVs throughout the dataset. Top: Bar chart reporting the total count of each UPV in the dataset. Bottom: Heatmap representing the normalised occurrence counts of each UPV in women's and men's interviews; the darker the colour, the more a UPV was mentioned in the interviews of that demographic group. For example, the UPV 'Energy Access' was elicited more often by men than by women. Note that UPVs with a very low count of total mentions (e.g., 'Preservation of the Environment' or 'Altruism') might display a skewed distribution in the heatmap.

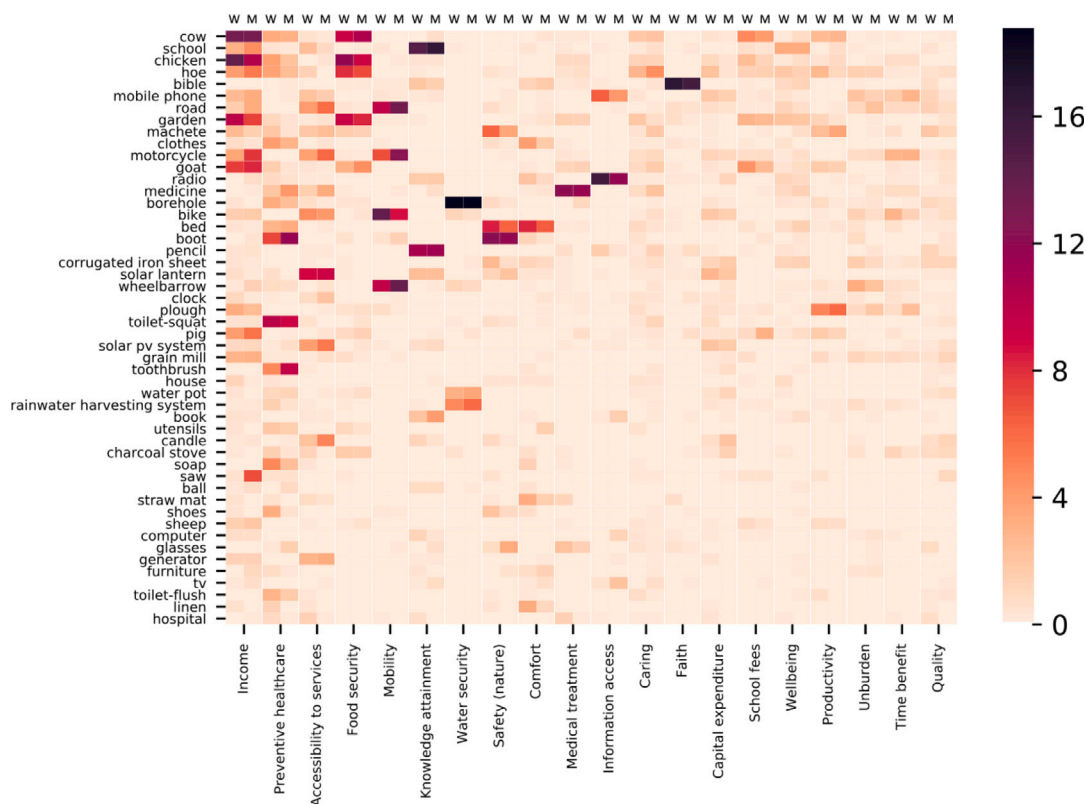


Fig. 4. Frequency with which each item was associated with each of the top 20 UPVs for women (W) and men (M). The top 20 UPVs annotated in the dataset are on the x axis and are displayed in descending frequency of annotation, while the items on the y axis in ascending frequency of selection. The darker the colour, the greater the number of times a UPV was annotated in the text associated with a given item.

Table 1

Item rank for the top 20 items selected across all participants, alongside the rank of these items for women and men separately, and the divergence of the men's rank from the women's rank where ↑ denotes a higher and ↓ a lower rank.

Items	Total rank	Women rank	Men rank	Divergence from women rank
School	1	2	1	↑ 1
Bible	2	1	5	↓ 4
Cow	3	3	4	↓ 1
Hoe	4	4	2	↑ 2
Garden	5	5	8	↓ 3
Road	6	9	3	↑ 6
Medicine	7	10	7	↑ 3
Borehole	8	14	6	↑ 8
Chicken	9	6	14	↓ 8
Clothes	10	8	13	↓ 5
Goat	11	11	11	=
Machete	12	15	10	↑ 5
Motorcycle	13	17	9	↑ 8
Iron sheet	14	7	19	↓ 12
Mobile phone	15	12	16	↓ 4
Pencil	16	20	12	↑ 8
Radio	17	19	17	↑ 2
Boot	18	25	15	↑ 10
Bike	19	21	18	↑ 3
Plough	20	21	18	↑ 3

Table 2

UPV rank for the top 20 UPVs across all participants, alongside the rank of UPVs for women and men separately, and the divergence of the men's rank from the women's rank where ↑ denotes a higher and ↓ a lower rank.

UPVs	Total rank	Women rank	Men rank	Divergence from women rank
Income	1	1	1	=
Preventive healthcare	2	2	2	=
Accessibility to services	3	4	3	↑ 1
Food security	4	3	4	↓ 1
Mobility	5	5	5	=
Knowledge attainment	6	7	6	↑ 1
Water security	7	8	7	↑ 1
Safety (nature)	8	6	8	↓ 2
Comfort	9	9	10	↓ 1
Information access	10	10	11	↓ 1
Caring	11	16	9	↑ 7
Medical treatment	12	11	15	↓ 4
Capital expenditure	13	12	13	↓ 1
Productivity	14	13	12	↑ 1
Faith	15	14	16	↓ 2
School fees	16	15	17	↓ 2
Wellbeing	17	19	14	↑ 5
Quality	18	20	18	↑ 2
Time benefit	19	17	20	↓ 3
Unburden	20	18	21	↓ 3

'aesthetics (items)' (W: 37, M: 46). Observations with regards to these are discussed in Section 4.3. It is important to note that UPVs with a lower (i.e., numerically higher) rank are not as robust and may be prone to sampling bias.

It was also investigated whether women and men linked the same values to the same items. The link between the top 20 UPVs and item selection for women and men is shown in Fig. 4. We generally find commonality between the item selected and the UPVs conveyed between women and men for most items. This is particularly true for items that are highly attributable, including for example, 'borehole' linked to 'water-security', 'boots' linked to 'safety (nature)', and 'bible' linked to 'faith'. Nevertheless there are some differences, some of which may correspond to gender norms. This is shown in Fig. 4 by the varying strengths of association for women and men between UPVs and items (the darker the colour the greater the association). For example, it was almost exclusively men that selected 'saw' in relation to 'income'. We

also observe a much greater attribution of 'motorbike' to 'income' conveyed by men. The latter may be explained by the fact that motorbike taxi drivers in Uganda are primarily male [81]. There are also similar examples for women; for example, women more frequently associate household items, such as 'linen', 'straw mat', 'bed', and 'clothes', with the value 'comfort'. This may also speak to the gendered norms of women undertaking most domestic labour within households [82].

Interestingly, we note that the findings in rank for the top 20 UPVs hold true irrespective of the level of analysis (i.e., be it sentence-based or item-based, full count or weighted count). This suggests that our base dataset and findings are robust to the different weighting criteria and levels of analysis.

4.3. Specific UPV observations

Throughout the analysis, certain UPV discrepancies were noted as particularly salient or worthy of further study. We expand on these below.

Men placed greater importance on 'caring' than women in this dataset (divergence in rank: 7). 'Caring', as per the UPV framework, refers to "the display of kindness and concern for family members". This may resonate with men typically being the household head in the study communities (the majority of households in Uganda are male-headed [83]). This was also evident from the vocabulary used to describe 'caring'. Quotes from male interviewees commonly included: "taking care of my family", "protect my family", and "look after my family". This highlights their perceived duty to take care of the family and is also in line with the greater priority placed on 'duty' by men than women (divergence in rank: 6). This is further illustrated in the word clouds, which show the values 'caring' and 'duty' (see Figs. 5 (e) and (b) respectively). It is noteworthy that both women and men use the word "man" in relation to duty. This discursive trend does not suggest that men care more about their family, but simply they may feel responsible for it.

Similarly, men placed greater importance on 'wellbeing' than women in this dataset (divergence in rank: 5). Wellbeing, as perceived by men, tended to be associated with the community's needs. Men commonly referred to the need of the community to develop in relation to wellbeing, as shown by this interviewee quote: "Because if people die we will never develop and as me <NAME>, if I keep clean and have a latrine my family will keep healthy and no case of diarrhea". This is also in line with the greater prioritisation placed on 'modernisation'⁷ by men (divergence in rank: 11).

Women placed greater importance on 'aspiration' than men (divergence in rank: 5). For both women and men, 'aspiration' referred not just to themselves, but also frequently to their children's future (see Fig. 5(d)). This can be further illustrated by the following statement made during a women's group discussion: "This helps them to educate their children for being our future leaders for example the president if had not gone to school he would have been a leader". This may of course be linked to 'caring' but cannot be replaced by it. In the context of the interviews conducted, 'aspiration' relates to a longer-term view of success whereas 'caring' reflects a desire to safeguard one's more immediate interests. The greater emphasis of women on aspiration resonates with previous papers on women's empowerment in Ghana. Wrigley-Asante [84] found that women beneficiaries of anti-poverty programmes in Dangme West district were diverting their extra credit to ensure the wellbeing of their family, making them a key contributor in the household's income.

Similarly, 'reputation' was ranked higher by women than men (divergence in rank: 6). Men commonly linked 'reputation' to one's role or oneself as is illustrated in the following two examples: "in our culture

⁷ In the UPV framework 'modernisation' refers to a "sense of advancement above the norm".

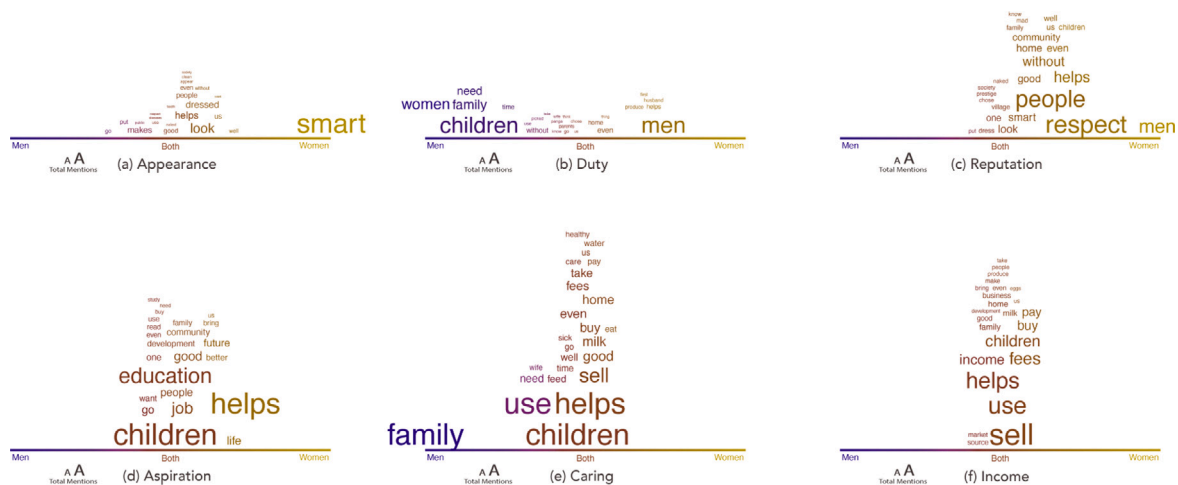


Fig. 5. Word clouds used to illustrate the vocabulary used to describe the values (a) ‘Appearance’, (b) ‘Duty’, (c) ‘Reputation’, (d) ‘Aspiration’, (e) ‘Caring’, and (f) ‘Income’. The bigger the word, the more often it was mentioned. Words further to the left are more often used by men, and those to the right are more often used by women.

and if you are a man and you can’t afford a cow, you are 99% less a man” and “if I have a cow in my compound that is another respect in my culture of <NAME> because you can’t marry someone’s daughter without cows and goats.” This quotation suggests a sense of masculinity affected by material wealth. This greater focus on the self is further emphasised by the fact that men placed greater importance on ‘performance (personal)’ than women (divergence in rank: 6). Reference was made to one’s “effort” in relation to work when discussing performance. Men’s ability to work hard and earn income appears intimately linked with their sense of self and personal reputation.

In contrast, women were more concerned about family wealth and appearance. Common reference was made to “being respected” (see Fig. 5(c) for vocabulary use in relation to ‘reputation’). This concern aligns with the higher importance women tended to place in the dataset on outward-facing values related to possessions, appearances, and social stability. However, while women do so frequently in relation to their self, they also do so for the purposes of the family’s social standing, as the following interview extract illustrates: “A respected home should have enough cloths for the whole family and then you will have respect in the village”. The importance placed on ‘respect’ by women was also highlighted by men during a men’s group discussion: “Women of today need a lot of respect once they have a good house they start feeling sweet”. Here we may begin to see relational aspects: men playfully resenting women’s need for “respect” and the perception that material wealth is again what is needed to make them feel “sweet”. It is evident that the word ‘sweet’ has perhaps a different connotation which can be fully understood within the context of a man’s group discussion. Such examples do highlight the limitations of the text analysis over analysis of spoken data as tone and body language would be useful, if subjective, indicators here.

The emphasis on reputation is similar to the greater importance placed by women on ‘appearance’ (divergence in rank: 5), which is also an outward facing value. The link between appearance and reputation is highlighted in the following excerpt from a women’s interview: “Clothes help me to appear smart in public because a normal human being is supposed to put on clothes”. Women commonly used vocabulary such as “beautiful”, “nice”, and “smart” when discussing these UPVs (the latter is shown in the word cloud for ‘appearance’ in Fig. 5(a)). A similar pattern could be observed with regards to the UPV ‘aesthetics (items)’ (divergence in rank: 9).

Women also placed greater importance on ‘shelter’ than men (divergence in rank: 6). While ‘shelter’ was commonly linked to having a “home”, women also referred to being able to “host visitors”. This

is another example of an outward facing value concerned with the perception of the visitor.

Despite common beliefs about the higher need for unburdening and time-saving for women than men, it is interesting to note that there was no difference in prioritisation between the two gender groups for ‘time benefit’ (W: 16, M: 16) and only a marginal difference for ‘unburden’ (W: 20, M: 18). Men in the study communities clearly value time-saving measures equally to women; this point of commonality may be very useful in the design of energy initiatives.

Based on the similarities and differences between what is important to men and women interviewees elucidated in this section, we next look at implications to the delivery of energy access projects.

5. Discussion and recommendations

The data and results presented in this paper enable a discussion on how energy can be transformative for both men and women based on their values, needs, and preferences at a given point in time and context. The results herein seem to contradict the common assumption that, when there is a heavily gendered division of labour and responsibility in a society, men and women would value different aspects of their lives according to their gendered practices. Against this expectation, this paper shows that in the studied Ugandan case communities at the time of data collection, there is little difference in the underlying values perceived as important by men and women. This is particularly true for their top ten values: ‘income’, ‘preventative healthcare’, ‘accessibility to services’, ‘food security’, ‘mobility’, ‘knowledge attainment’, ‘water security’, ‘safety (nature)’, ‘comfort’, and ‘information access’. Men and women also prioritised similar items and related in many cases the same values to the same items —although we observed slight differences in line with the division of labour. Nevertheless, this indicates that their wants and needs, as well as the drivers for those, often align. Many of which fall within the commonly used term of ‘basic human needs’.

Moving away from basic human needs and highest-importance values, some divergences emerge in the answers and vocabulary of the case communities. This is unsurprising as values are layered and informed by personal motivators, external influences such as institutions, and perceived societal roles. The way values are spoken about is also coloured by power dynamics, societal perceptions, and cultural norms as shown in the divergence with regards to ‘caring’ (W: 16, M: 9), which is consistent with the literature where ‘caring’ corresponds with the role of men as a ‘caretaker’ in the family or head of household [83].

Meanwhile, in practice, women perform most of the domestic labour e.g., spending time with the children [82].

In short, while gender roles in Ugandan society influenced the perceptions of items and tasks as well as the vocabulary used to describe these, the core values underpinning interviewee motivations to overcome fundamental life challenges are aligned across men and women. This piece of information is not surprising; as Wyrod [36] showed in their study on women's rights in Uganda, local systems of justice envisaged a shared "human dignity, freedom from oppression, and rules governing the just distribution of goods". Applying this to the context of energy projects, we can derive that, in some cases, energy access – which tends to realise the satisfaction of perceived basic human needs and values (e.g., 'water security' and 'food security') – can also be embedded within shared and just universal values.

The question then becomes how to ensure that the benefits of energy access are equally distributed across a population while promoting gender equality and women's empowerment. As previously discussed, values and practices are not synonymous; the same underlying values and motivations will not necessarily result in equal material benefit. In other words: *how can energy be delivered and used equitably?*

As discussed in Section 2, either a gender neutral approach to energy projects [85,86], or an excessive focus on women [30,43,87] can result in negative effects. It is key to 'get the balance right' [2] across genders while being mindful not to reproduce patriarchal values and gendered harms. With this in mind, we identify a number of mechanisms to improve gender equality in the delivery of energy services, and make the following recommendations to this effect:

1. **Implementing just and equitable project design.** Despite an increasing awareness that 'doing gender' does not involve only women, in practice, there is an important gap in designing projects that actively involve both men and women in the discussion. Doing so can help to ensure benefit to and distribution of energy services for all genders. This recommendation is in line with the work of Salas [88], who undertook a gender map for energy access in the Philippines and found that the needs of both women and men need to be addressed in design to maximise the relative benefits. Gender balanced needs assessment is critical to get 'buy-in' of both men and women to a project—commonality is key to negotiation. It is worth noting that meeting both men's and women's needs does not necessarily mean undertaking different project design for different gender groups. Instead, communication around the benefits of the same project design can correspond with the more gender-specific UPVs and vocabulary while retaining a root in common values across genders: as was evident from the results of this research (this is further discussed in our second recommendation below). What this means is that when implementing projects in Uganda but also more generally, project developers should focus less strongly on meeting the specific desires expressed by one gender, and instead focus on the common values underpinning the desires of all genders. A women-focused project, can still – to some extent – benefit men. Here a focus can be given to overarching and overlapping values. In the case of this research, energy project design could foster income generation, better access to information, and water access for irrigation as well as household use, among other high-priority values equally important to male and female villagers. Energy access could equally be related to important items – such as the home – appealing to women's desire for a welcoming environment for visitors, and men's desire to display their material wealth and care for their family.
2. **Improve project messaging to clearly communicate benefits for all genders.** There was significant overlap in the UPVs and vocabulary used by men and women when communicating their values. The similarities and differences of vocabulary are

illustrated by means of the example word clouds (Fig. 5). These subtle differences can be used in targeted messaging which communicates energy project benefits to specific demographics in accordance with their values. In the case of this research, male and female villagers are the messaging targets, but this could be expanded to other demographics. The following example illustrates how responses could be used to improve messaging pertaining to the delivery of a 'TV', so that a project resonates with the value 'entertainment'.

Male interviewee: *"I get advertisements for work and football as well as other stories."*

Female interviewee: *"... [it] is very important because seeing my children dance makes me happy".*

This illustrates the subtle differences in the vocabulary used by male and female villagers. The assumption that a single messaging strategy can generate uptake for entire communities, or can be re-used in different communities, speaks to the misconception of rural villagers as a monolith and perpetuates the harmful "single story" of rural villagers [89]. This holds particularly true where messaging is stereotyped. Commonalities in underlying values and motivations can indeed help to create cohesive messaging; however, such commonalities may lie in different intersections in each community and context, and care must be given not to assume these commonalities will lie within stereotypically assumed values.

An example of effective targeted messaging in energy access can be seen in the Shell Foundation's 'room to breathe' campaign. This campaign aimed to introduce specific designs of CCS into rural Indian households, with the aim of reducing indoor air pollution arising from conventional open fire cooking and the resulting respiratory health issues [90]. An initial awareness-raising campaign, which used messaging centred on the health benefits of the products, generated poor uptake. This grew, however, when the Shell Foundation instead introduced the 'room to breathe' campaign, which reflected that women placed great importance on improved cleanliness in the household arising from reduced smoke emission, whereas men prioritised the money-saving aspects of CCS. By adopting a more user-specific marketing campaign aligned with gendered end-user values, the Foundation achieved successful cookstove deployment [90]. Although the UPV method was not directly used in this example, the same principles were applied.

3. **Be mindful of instilling and reproducing patriarchal gender norms.** Gender-targeted messaging and project design can risk reinforcing harmful gender norms if not designed with a critical awareness of marginalising gender stereotypes. Project framing which replicates patriarchal structures is prevalent in energy projects in LMICs produced by corporate global organisations as a means of embracing social transformation [91]. An excessive focus on initiatives which facilitate women's gendered tasks (e.g., clean cooking initiatives), while aiming to improve women's health, do not challenge women's marginalised position in society. Such initiatives may risk reinforcing existing patriarchal norms if the framing of the project normalises existing inequalities. It could be argued that this was the case in the aforementioned "room to breathe" campaign [90]; however, this campaign can also be seen to protect women from certain gendered risks. Messaging, instead of focusing on facilitating women to continue in their limiting household role, could instead focus on the benefits to both men and women of women's unburdening. In the face of overwhelming persistent inequalities, a more critical approach to energy development initiatives is needed. Otherwise, these projects will continue to promise societal changes and improvements while inadvertently reinforcing oppressive gender structures. In Uganda, efforts have been made to remove inequalities between genders but success

has been poor in practice, as was discussed in the introduction [35,92]. The role of value-based messaging in avoiding the reproduction of patriarchy is precisely to orient future energy development in line with people's true values and needs. Rather than assuming the value of a project to a particular gender based on a stereotypical gender role, which can generate messaging and project framing which unintentionally reproduces this patriarchal structure, the true values and needs of each gender can be investigated. This can help project developers identify oppressing rhetoric for women which contradicts the needs and values they truly hold, and avoids reinforcing stereotypical patriarchal values.

To demonstrate these recommendations in practice, here we provide an **illustrative example** from one female interviewee. In practice, these techniques would be used for entire communities or demographic segments (e.g., women, older residents, disabled residents, etc.); we simply highlight a single participant to show how these recommendations can be actioned for improved project uptake.

To illustrate project messaging based on one of the interviewee's item selections, the following text is from an interview with Scola,⁸ a widow from a village Western Uganda, who selected a flush toilet:

"Recently I was almost raped by a thug when I escorted my son to the latrine at around 10:30pm in the night. By the way you can get diseases on those squatting latrines. If I have a flush toilet in my house I think I can be a king of all kings because I can't go out on those squatting latrines. Some diseases are anus itch and Candida and me I have never suffered from those diseases. As me <PERSON> the widow it can protect me from going outside alone. My husband used to escort me to everywhere I used to go and now am scared anything may happen. That flush toilet it help a lot on those young children who are just learning how to sit on the toilet because there no risk that a kid will fall into the toilet, actually we have so many cases in our village of kids that fall into pit latrine like six cases are reported every after one year".

In this example, Scola selected a flush toilet over a pit latrine because she aspires to be a 'king' in her community. She also values security; with a flush toilet in the house, she will not have to take the risk of walking to the latrine at night. Furthermore, a flush toilet can help guarantee the safety of her children, as they can no longer fall into the toilet. The UPV values attributable to her reasoning are 'aspiration', 'security', and 'safety'. Now, consider the case where we seek to offer electric lighting to Scola. We expect she will be more likely to buy into the initiative if it is designed and pitched by accentuating benefits in line with her personal values, leading her to value the lighting more. In designing an appropriate energy access project aligned with Scolas' values (as per Recommendation 1), we might consider implementing electric street lighting, instead of household light. Street lighting can provide a secure environment when walking to the latrine at night (e.g., security). With regards to appropriate communication (as per Recommendation 2), we might market the electric lighting as something which symbolises city living (e.g., aspiration) and discuss how electric illumination reduces the risk of fires by eliminating open flames (e.g., safety). This example gives helpful insight into how appropriate value-linked project design and messaging, which correlates values to project benefits, may look like. It also demonstrates how values are not necessarily linked to gendered roles (as per Recommendation 3); safety and security walking at night can be important to multiple demographics.

6. Conclusion

In this paper we uncovered the values of men and women in seven rural Ugandan communities, the language used to describe these values, and what that means for the delivery of energy access initiatives. We assessed 5230 utterances collected from 112 value-based interviews using the User-Perceived Value (UPV) approach and found that the top ten values – 'income', 'preventative healthcare', 'accessibility to services', 'food security', 'mobility', 'knowledge attainment', 'water security', 'safety (nature)', 'comfort', and 'information access' – were largely the same between the genders. Value divergence increased slightly when looking at lower-priority values. Subtle differences in vocabulary were used to describe values across genders, indicative of societal power dynamics and perceptions. These small differences can be used to conduct appropriate project messaging which connects underlying values to project benefits in a way that each gender will understand.

This type of community value assessment can enable an integrated understanding of energy priorities. It can promote community solidarity and help to resolve surface-level gendered tensions. Whereas many current energy projects integrate a gendered lens by focusing significantly or wholly on women (sometimes to their detriment), **we argue that a gender-balanced value-driven approach can create more positive impact and avoid unintentional harm.** Superficial gendered differences are commonly observed to dominate the design and messaging of today's energy interventions; here, we highlight the benefits of a more unified gender-inclusive strategy centred on core values. By deconstructing the gendered dimensions of needs through the identification of underlying values, we have identified previously invisible commonalities between gendered motivations in the rural Ugandan case communities at a given point in time.

Taking our findings in the broader context of the literature, we conclude that in Ugandan contexts aligned with our case communities, projects should focus less strongly on meeting the specific desires expressed by one gender, and instead focus on the common values underpinning the desires of both genders, with the overarching aim of the empowerment of women in mind. These could be done by using communication in line with value-related project benefits, using tailored messaging. We highlight that this must be done in a manner that avoids reinforcing stereotypical gender-norms. Finally, we show how energy projects in developing contexts may adopt similar value assessments to ensure benefit and uptake across genders.

At the time of our research, we did not find major differences in the way men and women in the selected villages perceive their highest priority values. Bearing in mind that this study is a snapshot in time, and that gender perceptions and values change (see [8]), we acknowledge that this result is not universal. Other communities in other countries may be different and have higher value divergence, especially when gender-norms are more prominent.

While this paper focused on energy access, the methodology and key takeaways can also be applied to development projects in other sectors. What we show is an approach of how to understand and better incorporate values and needs into project design decisions, whether they are aligned or divergent, to create equal benefit across genders.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

⁸ Pseudonym.

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Appendix

See [Table A.1](#).

Table A.1
UPVs and definitions.

<i>Emotional</i>	Conscience	
	Preservation of Environment	Being at peace with one another
	Harmony	Preservation of natural resources
	Contentment	
	Appealing Senses	Being pleasing to the senses taste and smell
	Aesthetics Items	Physical appearance of item or person which is pleasing to look at
	Comfort	State of being content, having a positive feeling
	Entertainment	Something affording pleasure, diversion or amusement
	Memorability	Association to a past event with emotional significance
	Human Welfare	
<i>Epistemic</i>	Safety (Animals Items Nature)	Being protected from or prevent injuries or accidents by animals or nature
	Security People	Being free from danger and threat posed by people
	Information	
	Information Access	Ability to stay informed
	Knowledge	
	Knowledge attainment	The ability to learn or being taught new knowledge
<i>Function</i>	Skill attainment	The ability to learn a new skill
	Convenience	
	Access to area	Having continuous access to the village or city
	Banking Access	Having continuous access to banking services
	Communication	Ability to interact with someone who is far
	Mobile Phone Access	Having continuous access to mobile telecommunication services
	Mobility of People	Ability to move from one place to another
	Multipurpose	Able to be used for a multitude of purposes
	Portable	An item that can easily be carried, transported or conveyed by hand
	Availability	Possible to get, buy or find in the area
	Time Benefit	Accomplish something with the least waste of time or minimum expenditure of time
	Time Management	Being able to work or plan towards a schedule
	Transportation	Conveying and transporting someone or something
	Unburden	Making a task easier by simplifying
	Cost Economy	
	Capital Cost	Fixed one time expenditure through purchase of an item or service
	Operational Expenditure	Cost savings achieved through the operation of an item or service
	School Fees	Ability to pay for school fee
	Income Economy	
	Asset	Something that can be of future benefit
	Barter Trade	Non-monetary trade of goods or services
	Business Opportunity	Sense of entrepreneurship beyond the normal occupation
	Income	Ability to make money through the sale of a good or service
	Quality and Performance	
	Effectiveness	Adequate to accomplish a purpose or producing the result
	Lastingness	Continuing or enduring a long time
	Productivity	Rate of output and means that lead to increased productivity
	Reliability	The ability to rely or depend on operation or function of an item or service
	Usability	Refers to physical interaction with item being easy to operate handle or look after
<i>Indigenous</i>	Social Norm	
	Celebration	Association chosen as they play important part during celebration
	Manners	Ways of behaving with reference to polite standards and social components
	Morality	Following rules and the conduct
	Tradition	Expected form of behaviour embedded into the specific culture of city or village
	Religion	
<i>Intrinsic Human</i>	Faith	Belief in god or in the doctrines or teachings of religion
	Health	
	Longevity	Means that lead to an extended life span

(continued on next page)

Table A.1 (continued).

Intrinsic Human	Health Care Access	Being able to access medical services or medicine
	Treatment	To require a hospital or medical attention as a consequence of illness or injury
	Preserv. of Health	Practices performed for the preservation of health
	Physiological	
	Education Access	Being able to access educational services
	Energy Access	Being able to obtain energy services or resources
	Food Security	The ability to have a reliable and continuous supply of food
	Shelter	A place giving protection from bad weather or danger
	Water Access	Continuous access or availability of water
	Water Quality	To have clean water as sickness, colour and taste
Social Significance	Quality of Life	
	Community Development	Improvement of services or infrastructure for benefit of collective group or people
	Wellbeing	A good or satisfying living condition
	Identity	
	Appearance	Act or fact of appearing as to the eye or mind of the public
	Belongingness	Association with a certain group, their values and interests
	Dignity	The State or quality of being worthy of honour or respect
	Personal Performance	The productivity to which someone executes or accomplishes work
	Status	
	Aspiration	Desire or aim to become someone better or more powerful or wise
	Modernisation	Transition to a modern society away from a traditional to the manner of a developed society
	Reputation	Commonly held opinion about ones character
	Social Interaction	
	Altruism	The principle and practice of unselfish concern
	Family Caring	Displaying kindness and concern for family members
	Role Fulfilling	Duty to fulfilling tasks or responsibilities associated with a certain role
	Togetherness	Warm fellowship, as among friends or members of a family

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